

Established Invasive Plants Monitoring

Network Parks Where Invasive Plants To Be Monitored

- American Memorial Park (AMME)
- Kalaupapa NHP (KALA)
- Kaloko-Honokōhau NHP (KAHO)
- Hawai'i Volcanoes NP (HAVO)
- Haleakalā NP (HALE)
- National Park of American Samoa (NPSA)
- Pu'uhonua o Hōnaunau NHP (PUHO)
- Pu'ukoholā Heiau NHS (PUHE)

Importance: Threat to Native Flora and Fauna

Nonnative plant species invasions present a serious threat to Pacific island ecosystems. Invasion by nonnative plants reduces native plant diversity and abundance, and alters vegetation structure. At their very worst, ecologically disruptive species (e.g., nonnative grasses, tamaligi, miconia, strawberry guava) are able to completely displace the native vegetation and alter ecosystem processes. Nonnative plant invasions can also lead to significant economic and cultural costs. For example, nonnative grasses are responsible for increased fire frequency and spread in wildland urban interfaces, and the loss or alteration of culturally significant species and landscapes.

Among the more than 4,600 nonnative species established in the Hawaiian Islands, there are 100+ highly disruptive nonnative pest species. These are species are regarded as the greatest invasive plant threats to native Hawaiian biota and ecosystems. There are over 105 species identified as disruptive or potentially disruptive in American Samoa; and 133 species identified in Micronesia. Some of these species have not invaded parks, while others are just beginning to establish; still others have well-established populations that have already displaced native plant communities.

Long-Term Monitoring

Long-term monitoring of invasive plant species is critical for the effective management of native ecosystems. The current protocol takes a two pronged approach to monitoring invasive plants every five years within PACN parks. Established invasive species will be identified and counted along both fixed and random belt transects within relatively intact natural areas or focal plant communities. These data will allow managers to generate maps of weed distributions and detect changes in established weed populations. In addition, a select set of man-made corridors including roads, trails, fence lines, and other disturbed areas will be surveyed for highly disruptive invasive plants because these are areas where seeds are often transported by people (e.g., seeds on vehicles, boots, field equipment, etc.). Combined, these two techniques aim to monitor established invasive plant species as well as incipient invaders. Effective management of park natural areas cannot occur without a comprehensive, quantitative, long-term monitoring program.

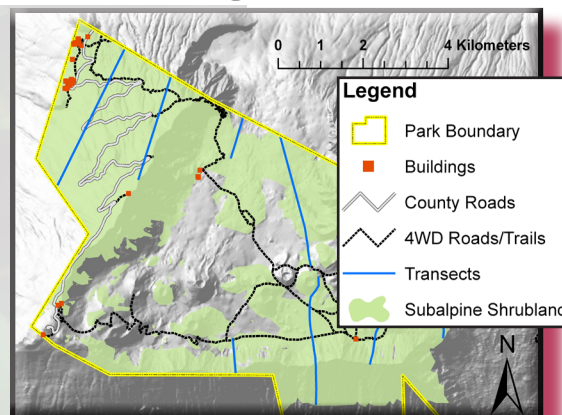
Monitoring Objective

Determine the changes in the distribution and abundance of disruptive nonnative plant species:

- (1) along belt transects throughout focal plant communities, and
- (2) within and around major dispersal corridors (roads, trails, building sites, etc...)

Management Applications

- Provide nonnative species abundance and distribution information allowing managers to assess changing ecosystem threats, formulate control strategies (e.g., eradication, containment, exclusion, monitoring) and prioritize areas and species for management.
- Reduce or prevent widespread invasions of incipient or new species before control becomes difficult.
- Evaluate the effectiveness of management actions such as herbicide treatments, biological controls, ungulate removal, and fencing.



Invasives are monitored along plant community transects, trails, and roads at HALE.



Some major invasive plants in PACN parks from top: strawberry guava (*Psidium cattleianum*), tamaligi (*Falcataria moluccana*), scarlet gourd (*Coccinia grandis*), fountain grass (*Pennisetum setaceum*), and miconia (*Miconia calvescens*)

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